

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:  
Maria Raidel et al.

Prior Application:  
Group Art Unit: 3761

Serial Number: Unassigned

Examiner: C. Mager

Filed: Concurrently herewith

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For: ABSORBENT ARTICLE AND PROCESS FOR THE DIRECTED DRAINAGE OF  
FLUIDS RELEASED IN A LOCALIZED MANNER

PRELIMINARY AMENDMENT C

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

Prior to examining this application on its merits, kindly amend the application as follows. A "version with markings to show changes made" can be found in "Appendix A" starting at page 14 of this paper.

CLEAN VERSION OF REPLACEMENT PARAGRAPHS

In the Specification

On page 1 line 6, before the first paragraph starting with "The present invention", please insert the following paragraph.

--Cross-Reference to Related Applications

This application is a continuation of U.S. Application number 09/142,115 filed 09/04/98 which was the National Stage of International Application No. PCT/EP97/01144 filed 03/06/97, which claims priority to German Application No. 196 09 462.3 filed 03/11/96. Thus, U.S. Application number 09/142,115 is incorporated herein by reference in its entirety.--

Please replace the paragraph starting at page 3 line 26 with the following paragraph.

--The distribution of the liquid ,i.e., drainage, to the front and rear ends of the article is achieved especially favorably by way of the feature that the liquid distribution layer has an undulating strip of material or a pleated strip of material whose undulations are arranged in such a way that the liquid is preferentially drained off in the longitudinal direction and toward the ends of the article. The undulating strip of material or the pleated strip of material can consist of a textile material, for example, whereby this has virtually no absorptive capacity of its own; as a result, one prevents the situation in which this strip of material permanently retains the liquid. The undulating strip of material serves primarily in draining off the liquid ,i.e. drainage, and as a spacer. Visible discernment of the absorptive element, which has been in contact with liquid, can be prevented if the undulating strip of material additionally contains a colorant such as a dye; as a result, one increases the subjective feeling of cleanness of the male or female wearer of the article.--

Please replace the paragraph starting at page 4 line 13 with the following paragraph.

--The undulating strip of material is preferably connected to an additional strip of material that, on the one hand, can assist in stabilizing the undulations and, on the other hand, can also assist the directed transport of the liquid that has penetrated into the article. A so-called uncreped-through-air-dried material, UCTAD material, has proven to be especially suitable for such an additional strip of material.--

Please replace the paragraph starting at page 6 line 25 with the following paragraph.

--According to a preferred form of embodiment of the article in accordance with the invention, the additional strip of material has a central area, as seen in the longitudinal direction, without funnel-shaped openings and the undulating strip of material is applied to the central area. The funnel-shaped openings are located in the area located at the edges as seen in the longitudinal direction. The edges with the funnel-shaped openings are now folded under the area provided with the undulating strip of material, in such a way that the funnel-shaped openings with their tapering areas lie opposite the liquid storage layer. As a result of introducing the funnel-shaped openings into the additional strip of material after fabrication of such additional strip of material, e.g., by piercing with needles or other suitable mechanical means, the additional strip of material becomes perforated; as a result, small absorptive feet can form at the tapering end of the funnel-shaped openings. Especially effective fluid transport is achieved when these small absorptive feet are in contact with the liquid storage layer since this assists the directed transport of liquid from the liquid distribution layer to the liquid storage layer. The folding inward of the additional strip of material can be arranged in such a way that it takes place from each side as far as, approximately, the middle of the additional strip of material. However, the edge areas can also have the same breadth as the area with the additional strip of material on which the undulating strip of material has been pleated. As a result of folding in the edge areas, which have been provided with funnel-shaped openings, a triple layer structure is formed underneath the additional strip of material. This triple layer structure effectively prevents rewetting from arising in the liquid distribution layer by liquid from the liquid storage (component).--

Please replace the paragraph starting at page 12 line 20 with the following paragraph.

--Figure 1 shows an absorbent article 10 with a front area 12, a rear area 14, and a central part 16 that joins the front and rear areas together. The liquid-permeable, upper covering layer of highly pigmented spun textile material is given the reference number 18 and the lower liquid-impermeable layer of the absorbent article is given the reference number 20. The liquid distribution layer 22 is arranged below the liquid-permeable layer 18. In the form of embodiment in accordance with Figure 1, the directed transport of liquids into the terminal areas of the absorbent article 10 takes place by means of the undulating strip of material 26. As illustrated in FIGURES 1, 4, and 5, the transverse undulated configuration of the undulating strip defines longitudinal transport channels that, in some embodiments, may be void of any tangible material which would impede free flow of liquid along the channels. The undulating strip of material 26 is pleated onto an additional strip of material 28. The undulating strip of material 26 is assembled from a textile material (pigmented spun textile material) and the additional strip of material 28 is assembled from an UCTAD material. In this regard, the additional strip of material 28 is folded over downward in the edges so that the areas that have been folded over come to lie parallel to the undulating strip of material. Passages defining funnel-shaped openings 30 are to be found in the folded over areas at the additional strip of material 28. The liquid storage layer 24 is located underneath the additional strip of material 28.--

Please replace the paragraph starting at page 15 line 1 with the following paragraph.

--Figure 3A is an enlarged section of the contact area between the liquid distribution layer 22 and the liquid storage layer 24. The preferential direction of liquid transport is again indicated by the arrows in Figure 3. Figure 3 shows the additional strip of material 28 assembled in the form of three layers. In this regard, the uppermost layer 28a, to which the undulating strip of material is applied, is arranged without funnel-shaped openings. In contrast, the take-away layers 28b and 28c, which lie underneath, have funnel-shaped openings 30. As a result of the configuration of the funnel-shaped openings 30, one brings about the situation in which the take-away

layers 28b and 28c can be separated from one another by a certain distance as shown in Figure 3B; as a result, one prevents any upward return of liquid. A separation 44 can be formed (Figure 3B) between the take-away layer 28c and the additional strip of liquid storage layer 24 by means of the funnel-shaped openings 30, whereby this separation also contributes to the prevention of liquid being transferred back from the liquid storage layer 24 to the liquid distribution layer 28.--

Please replace the paragraph starting at page 16 line 8 with the following paragraph.

--Figure 5 is a section, which is illustrated on an enlarged scale, from Figure 4. It also shows the undulating strip of material 26 in the form of a cross section. The undulating strip of material 26 is connected to the additional strip of material 28 via a number of points of contact. The layer 28 comprises the three layers 28a, 28b, and 28c. The layer 28a, which supports the undulating strip of material 26, does not have any openings 30. In contrast, the two take-away layers 28b and 28c, which are arranged below it, contain funnel-shaped openings 30 that assist the vertically directed flow of that which has penetrated therein. A canal-type structure is generated by this flow, which is directed vertically downward, and prevents any upward return of liquid. Upward release of liquid via the layer 28 almost never takes place.--

Please replace the paragraph starting at page 26 line 1 with the following paragraph.

--Method for directed drainage of fluids emerging in a localized manner, and further absorbent article which comprises: a front region; a rear region; a central region between the front and rear regions; an upper layer permeable to body fluids and which faces the body of the user when the absorbent article is in use; a lower layer impervious to body fluids and which is remote from the body of the user when the absorbent article is in use; a fluid-distribution layer disposed between the fluid-permeable layer and the impervious layer, the fluid-distribution layer extending from the front region to the rear region; and a fluid-storage layer disposed between the lower layer and the fluid-distribution layer. The absorbent article comprises one or

more transport layers transferring fluid from the fluid-distribution layer at least into the part of the fluid-storage layer located in the front and/or rear region of the absorbent article.--

In the Claims

Kindly cancel Claims 1-35 without prejudice and with right of reentry into this or any other appropriate application.

Please add the following new claims:

36. An absorbent article having a front area and a rear area, and a central area between the front and rear areas, said absorbent article comprising:

- (a) a liquid-permeable layer, which is turned toward a body of a wearer during use of the absorbent article;
- (b) a liquid-impermeable layer, which is turned away from such body of such wearer during use of the absorbent article;
- (c) a liquid distribution layer disposed between the liquid-permeable layer and the liquid-impermeable layer, and extending between the front area and the rear area, said liquid distribution layer comprising at least one web of sheet material, said at least one web of sheet material having openings therein formed after fabrication of the respective web of sheet material; and
- (d) a liquid storage layer between the liquid-impermeable layer and the liquid distribution layer, said liquid distribution layer transferring fluid to at least part of the liquid storage layer located in one or both the front area and the rear area of the absorbent article.

37. An absorbent article as in Claim 36, said openings in said at least one web of sheet material being mechanically-formed openings.

38. An absorbent article as in Claim 36 wherein the liquid distribution layer selectively facilitates transfer of fluid into one or both the front area and the rear area of the absorbent article.

39. An absorbent article as in Claim 36, the liquid distribution layer comprising undulations arranged so as to form transport channels extending along a longitudinal direction of said absorbent article.

40. An absorbent article as in Claim 36 wherein the liquid distribution layer comprises an undulating strip of material, connected to said at least one sheet which bears the openings.

41. An absorbent article as in Claim 39 wherein the undulating strip of material is sufficiently pigmented that such pigment prevents visible discernment of the liquid storage layer.

42. An absorbent article as in Claim 36 wherein said at least one web comprises an UCTAD material.

43. An absorbent article as in Claim 36, said liquid storage layer extending from the central area into the front area and the rear area, the liquid storage layer having a higher liquid retention capacity in one or both the front area and the rear area than in the central area.

44. An absorbent article as in Claim 36, said liquid distribution layer transferring fluid to at least part of the liquid storage layer at areas of the liquid distribution layer and of the liquid storage layer, which are brought into contact with one another via compression.

45. An absorbent article as in Claim 44 wherein the areas which are brought into contact with one another via compression are arranged in a point-like manner.

46. An absorbent article as in Claim 36 wherein the liquid distribution layer is in contact with the liquid storage layer via hydrophilic adhesive.

47. An absorbent article as in Claim 46 wherein the liquid distribution layer and the liquid storage layer are connected by the adhesive in a point-like manner.

48. An absorbent article as in Claim 36 wherein the openings in the liquid distribution layer comprise funnel-shaped openings for transferring fluid, such funnel-shaped openings tapering inwardly toward the liquid storage layer.

49. An absorbent article having a front area and a rear area, and a central area between the front and rear areas, said absorbent article comprising:

- (a) a liquid-permeable layer disposed toward a body of a user during use of the absorbent article;
- (b) a liquid-impermeable layer disposed away from such body of such user during use of the absorbent article;



- (c) a liquid distribution layer, which comprises discrete passages therethrough, said discrete passages promoting movement of liquid toward the liquid-impermeable layer, said liquid distribution layer being disposed between the liquid-permeable layer and the liquid-impermeable layer; and
- (d) a liquid storage layer disposed between the liquid-impermeable layer and the liquid distribution layer, said liquid distribution layer transferring fluid to at least part of the liquid storage layer of the absorbent article.

50. An absorbent article as in Claim 49, said liquid distribution layer comprising an undulating strip of material and an additional strip of material, wherein said passages are arranged in edges of the additional strip of material, said edges being folded inward such that said edges are located underneath the undulating strip of material.

51. An absorbent article as in Claim 50 wherein said edges run in a longitudinal direction of the absorbent article, and are folded over a central portion of the additional strip of material such that the passages taper inwardly toward the liquid storage layer.

52. An absorbent article as in Claim 50, wherein undulations of said undulating strip of material define fluid transport channels extending in a longitudinal direction of said absorbent article.

53. An absorbent article as in Claim 50 wherein the additional strip of material comprises an UCTAD material.

54. An absorbent article as in Claim 49, the liquid storage layer extending from the front area to the rear area of said absorbent article, the liquid storage layer having a higher liquid retention capacity in at least one of the front area and the rear area of the absorbent article, than in the central area.

55. An absorbent article as in Claim 49 wherein areas of the liquid distribution layer and areas of the liquid storage layer are in contact with one another via compression, thereby facilitating transfer of liquid.

56. An absorbent article as in Claim 49 wherein the passages of the liquid distribution layer define openings for transferring liquid, such passages tapering inwardly toward the liquid storage layer.

57. An absorbent article as in Claim 49 wherein the passages have feet at tapering ends thereof, said feet being in contact with the liquid storage layer.

58. An absorbent article as in Claim 49, the passages of the liquid distribution layer being disposed exclusively in one or both of the front area and the rear area of the absorbent article.

59. An absorbent article as in Claim 49 wherein the absorbent article comprises a woman's sanitary pad or a woman's hygiene inlay.

60. An absorbent article as in Claim 50 wherein the undulating strip of material contains a colorant such as a dye.

61. An absorbent article having a front area, a rear area, and a central area between the front area and the rear area, said absorbent article comprising:

- (a) a liquid-permeable layer disposed toward a body of a wearer during use of the absorbent article;
- (b) a liquid-impermeable layer disposed away from the body of such wearer during use of the absorbent article;
- (c) a liquid distribution layer, which promotes movement of liquid toward the liquid-impermeable layer, said liquid distribution layer being disposed between the liquid-permeable layer and the liquid-impermeable layer; and
- (d) a liquid storage layer disposed between the liquid-impermeable layer and the liquid distribution layer,

said liquid distribution layer comprising areas having passages defining openings for transferring liquid, such passages having feet at the tapering ends thereof, said feet being in exclusive contact with the liquid storage layer and forming areas of separation between the liquid distribution layer and the liquid storage layer, whereby said areas of separation attenuate reverse wicking of liquid from the liquid storage to the liquid distribution layer.

62. An absorbent article having a front area, a rear area, and a central area arranged between the front area and the rear area, said absorbent article comprising:

- (a) a liquid-permeable layer disposed toward a body of a wearer during use of the absorbent article;
- (b) a liquid-impermeable layer disposed away from such body of such wearer during use of the absorbent article;

- (c) a liquid distribution layer disposed between the liquid-permeable layer and the liquid-impermeable layer, said liquid distribution layer including at least first and second take-away layers each having funnel-shaped openings defining discrete passages therethrough which promote movement of liquid away from the liquid-permeable layer; and
- (d) a liquid storage layer disposed between the liquid-impermeable layer and the liquid distribution layer, wherein respective openings of said first take-away layer and said second take-away layer of said liquid distribution layer are spaced laterally from each other, thus preventing a direct, straight-line path for reverse wicking of fluid, whereby spacing of respective openings of said first take-away layer and said second take-away layer of said liquid distribution layer contributes to the prevention of liquid being transferred back from the liquid storage layer to the liquid distribution layer.

63. An absorbent article as in Claim 62, said liquid distribution layer further comprising an uppermost layer disposed between the liquid-permeable layer and said take-away layers, said uppermost layer being void of any funnel-shaped openings.

64. An absorbent article as in Claim 63, said liquid distribution layer further comprising an undulating strip of material disposed between the liquid-permeable layer and said uppermost layer, said undulating strip of material containing colorant, such as dye.

65. An absorbent article as in Claim 62, a first respective portion of each said funnel-shaped opening closest to the liquid-permeable layer being wider than a second respective portion of each said funnel-shaped opening most remote from the liquid-permeable layer, thereby forcing X-Y-direction travel as well as Z-direction travel of any potential reverse wicking liquid.

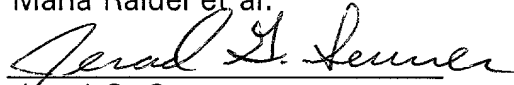
REMARKS

Claims 1-35 have been cancelled. No claims have been amended. New Claims 36-65 have been added. Claims 36-65 are now in the application. Early allowance of the claims as presented is respectfully requested.

A check for \$970.00 is enclosed to pay for the initial filing fee, the 1 additional independent claim, and the 10 additional dependent claims. No other fee is believed to be due. Should this fee be insufficient, or should any other fee be properly due, kindly charge same to Deposit Account 23-2130.

Respectfully submitted,  
Maria Raidel et al.

By:



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23482

PATENT TRADEMARK OFFICE

May 14, 2001

Appleton, Wisconsin

920-831-0100

920-831-0101 FAX

APPENDIX A

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification

Please replace the paragraph starting at page 3 line 26 with the following paragraph.

--The distribution of the liquid ,i.e., drainage, to the front and rear ends of the article is achieved especially favorably by way of the feature that the liquid distribution layer has an undulating strip of material or a pleated strip of material whose undulations are arranged in such a way that the liquid is preferentially drained off in the longitudinal direction and toward the ends of the article. The undulating strip of material or the pleated strip of material can consist of a textile material, for example, whereby this has virtually no absorptive capacity of its own; as a result, one prevents the situation in which this strip of material permanently retains the liquid. The undulating strip of material serves primarily in draining off the liquid ,i.e. drainage, and as a spacer. Visible discernment of the absorptive element, which has been in contact with liquid, can be prevented if the undulating strip of material additionally contains a colorant such as a dye; as a result, one increases the subjective feeling of cleanness of the male or female wearer of the article.--

Please replace the paragraph starting at page 4 line 13 with the following paragraph.

--The undulating strip of material is preferably connected to an additional strip of material that, on the one hand, can assist in stabilizing the undulations and, on the other hand, can also assist the directed transport of the liquid that has penetrated into the article. A so-called ["uncrept-through air-dried"] uncreped-through-air-dried material ,UCTAD material, has proven to be especially suitable for such an additional strip of material.--

Please replace the paragraph starting at page 6 line 25 with the following paragraph.

--According to a preferred form of embodiment of the article in accordance with the invention, the additional strip of material has a central area, as seen in the longitudinal direction, without funnel-shaped openings and the undulating strip of material is applied to the central area. The funnel-shaped openings are located in the area located at the edges as seen in the longitudinal direction. The edges with the funnel-shaped openings are now folded under the area provided with the undulating strip of material, in such a way that the funnel-shaped openings with their tapering areas lie opposite the liquid storage layer. As a result of introducing the funnel-shaped openings into the additional strip of material after fabrication of such additional strip of material, e.g., by piercing with needles or other suitable mechanical means, the additional strip of material becomes perforated; as a result, small absorptive feet can form at the tapering end of the funnel-shaped openings. Especially effective fluid transport is achieved when these small absorptive feet are in contact with the liquid storage layer since this assists the directed transport of liquid from the liquid distribution layer to the liquid storage layer. The folding inward of the additional strip of material can be arranged in such a way that it takes place from each side as far as, approximately, the middle of the additional strip of material. However, the edge areas can also have the same breadth as the area with the additional strip of material on which the undulating strip of material has been pleated. As a result of folding in the edge areas, which have been provided with funnel-shaped openings, a triple layer structure is formed underneath the additional strip of material. This triple layer structure effectively prevents rewetting from arising in the liquid distribution layer by liquid from the liquid storage (component).--

Please replace the paragraph starting at page 12 line 20 with the following paragraph.

--Figure 1 shows an absorbent article 10 with a front area 12, a rear area 14, and a central part 16 that joins the front and rear areas together. The liquid-permeable, upper covering layer of highly pigmented spun textile material is given the reference number 18 and the lower liquid-impermeable layer of the absorbent article is given the

reference number 20. The liquid distribution layer 22 is arranged below the liquid-permeable layer 18. In the form of embodiment in accordance with Figure 1, the directed transport of liquids into the terminal areas of the absorbent article 10 takes place by means of the undulating strip of material 26. As illustrated in FIGURES 1, 4, and 5, the transverse undulated configuration of the undulating strip defines longitudinal transport channels that, in some embodiments, may be void of any tangible material which would impede free flow of liquid along the channels. The undulating strip of material 26 is pleated onto an additional strip of material 28. The undulating strip of material 26 is assembled from a textile material (pigmented spun textile material) and the additional strip of material 28 is assembled from an UCTAD material. In this regard, the additional strip of material 28 is folded over downward in the edges so that the areas that have been folded over come to lie parallel to the undulating strip of material. [Funnel-shaped] Passages defining funnel-shaped openings 30 are to be found in the folded over areas at the additional strip of material 28. The liquid storage layer 24 is located underneath the additional strip of material 28.--

Please replace the paragraph starting at page 15 line 1 with the following paragraph.

--Figure 3A is an enlarged section of the contact area between the liquid distribution layer 22 and the liquid storage layer 24. The preferential direction of liquid transport is again indicated by the arrows in Figure 3. Figure 3 shows the additional strip of material 28 assembled in the form of three layers. In this regard, the uppermost layer 28a, to which the undulating strip of material is applied, is arranged without funnel-shaped openings. In contrast, the take-away layers 28b and 28c, which lie underneath, have funnel-shaped openings 30. As a result of the configuration of the funnel-shaped openings 30, one brings about the situation in which the take-away layers 28b and 28c can be separated from one another by a certain distance as shown in Figure [3A] 3B; as a result, one prevents any upward return of liquid. A separation 44 can be formed (Figure 3B) between the take-away layer 28c and the additional strip of liquid storage layer 24 by means of the funnel-shaped openings 30, whereby this separation also contributes to the prevention of liquid being transferred back from the liquid storage layer 24 to the liquid distribution layer 28.--



Please replace the paragraph starting at page 16 line 8 with the following paragraph.

--Figure 5 is a section, which is illustrated on an enlarged scale, from Figure 4. It also shows the undulating strip of material 26 in the form of a cross section. The undulating strip of material 26 is connected to the additional strip of material 28 via a number of points of contact. The layer 28 comprises the three layers 28a, 28b, and 28c. The layer 28a, which supports the undulating strip of material 26, does not have any openings 30. In contrast, the two take-away layers 28b and 28c, which are arranged below it, contain funnel-shaped openings 30 that assist the vertically directed flow of that which has penetrated therein. A canal-type structure is generated by this flow, which is directed vertically downward, and prevents any upward return of liquid. Upward release of liquid via the layer 28 almost never takes place.--

Please replace the paragraph starting at page 26 line 1 with the following paragraph.

--[The invention concerns an] Method for directed drainage of fluids emerging in a localized manner, and further absorbent article [(10)] which comprises: a front region [(12)]; a rear region [(14)]; a central region [(16) disposed] between the front and rear regions; an upper layer permeable to body fluids [(18)] and which faces the body of the user when the absorbent article [(10)] is in use; a lower layer [(20)] impervious to body fluids and which is remote from the body of the user when the absorbent article [(10)] is in use; a fluid-distribution layer [(22)] disposed between the fluid-permeable layer [(18)] and the impervious layer [(20)], the fluid-distribution layer [(22)] extending from the front region [(12)] to the rear region [(14)]; and a fluid-storage layer [(24)] disposed between the lower layer [(20)] and the fluid-distribution layer [(22)]. The absorbent article [(10)] comprises one or more transport [layer] layers transferring fluid from the fluid-distribution layer at least into the part of the fluid-storage layer [(24)] located in the front [region (12)] and/or rear region [(14)] of the absorbent article [(10)].

[The invention further concerns a method for the directed transport of fluids received at a localized area.]--